

**WHAT IS CLAIMED IS:**

1. An optical subscriber network system for performing bidirectional transmission/reception of digital broadcast signals and Internet signals, comprising:

5 (I) a server-side bidirectional transmitter comprising:

(a) a first semiconductor laser for optically modulating and transmitting the optically modulated digital broadcast signals;

(b) a second semiconductor laser for transmitting downstream Internet data;

(c) a server-side photodiode for receiving upstream Internet data;

10 (d) a band pass filter (BPF) coupled to an input of the server-side photodiode, for selecting the upstream Internet data; and

(e) a server-side multi-branch optical waveguide element for separating the optically modulated digital broadcast signals, the downstream Internet data and the upstream Internet data; and

15 (II) a subscriber-side bidirectional optical receiver comprising:

(a) a subscriber-side multi-branch optical waveguide element for separating data transmitted from the server-side bidirectional optical transmitter;

(b) a subscriber-side first photodiode for detecting the optically modulated digital broadcast signals transmitted from the server-side first semiconductor laser;

20 (c) a subscriber-side second photodiode for detecting the downstream Internet data transmitted from the server-side second semiconductor laser; and

(d) a subscriber-side semiconductor laser for transmitting the upstream Internet data transmitted from a subscriber part.

2. The optical subscriber network system as set forth in Claim 1, wherein the  
5 server-side first semiconductor laser optically modulates digital broadcast data and transmits the optically modulated signal to the subscriber side bi-directional optical receiver.

3. The optical subscriber network system as set forth in Claim 1, wherein the  
server-side second semiconductor laser optically modulates downstream Internet data and  
10 transmits the optically modulated signal to the subscriber-side bidirectional optical receiver.

4. The optical subscriber network system as set forth in claim 1, wherein the  
server-side photodiode is a detecting light element for detecting upstream Internet data  
transmitted from a downstream subscriber.

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5. The optical subscriber network system as set forth in claim 1, wherein the  
server-side band pass filter (BPF) filters all data except for the upstream Internet data  
transmitted from a subscriber part.

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6. The optical subscriber network system as set forth in claim 1, wherein the server-side bidirectional optical transmitter and the subscriber-side bidirectional optical receiver have a mutually asymmetric transmission structure.

5 7. The optical subscriber network system as set forth in claim 1, wherein the subscriber-side bidirectional optical receiver further comprises a first band pass filter (BPF) between the subscriber-side first photodiode and the multi-branch optical waveguide element.

10 8. The optical subscriber network system as set forth in claim 7, wherein the subscriber-side bi-directional optical receiver filters all digital broadcast signals and wavelength bands except for the optically modulated digital broadcast data transmitted from the server-side first semiconductor laser.

15 9. The optical subscriber network system as set forth in claim 1, wherein the subscriber-side bidirectional optical receiver further comprises a second band pass filter (BPF) situated between the subscriber-side second photodiode and the multi-branch optical waveguide element.

20 10. The optical subscriber network system as set forth in claim 9, wherein the second band pass filter (BPF) filters all wavelength bands and signals except for the downstream internet data transmitted from the server-side second semiconductor.

11. The optical subscriber network system as set forth in claim 1, wherein the first photodiode detects the optically modulated digital broadcast data transmitted from the first semiconductor laser and transmits the optically modulated signal to a digital receiver.

5 12. The optical subscriber network system as set forth in claim 1, wherein the subscriber-side second photodiode detects downstream internet data transmitted from the server-side second semiconductor laser and reconfigures the data into an form suitable for viewing by a subscriber on a subscriber computer.

10 13. The optical subscriber network system as set forth in claim 1, wherein the photodiodes are VCSELs (Vertical Cavity Surface Emitter Lasers) having different wavelength bands.

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